CLAIMS

1. A computerized system for tracking and locating a source of ionizing radiation, the system comprising:

(a) at least one non-imaging sensor module comprising at least one radiation detector, said at least one radiation detector capable of receiving ionizing radiation from the radiation source and producing an output signal; and

(b) said CPU designed and conFigured to receive said output signal and translate said output signal to directional information.

2. The system of claim 1, wherein the source of radiation is integrally formed with or attached to a medical device.

3. The system of claim 1, wherein said at least one sensor module includes at least two sensor modules.

4. The system of claim 3, wherein said at least two sensor modules includes at least three sensor modules.

5. The system of claim 1, wherein at least one of said at least one sensor module further comprises a locomotion device, said locomotion device capable of imparting translational motion to said sensor module so that said sensor module is moved to a new location.

6. The system of claim 5, wherein said locomotion device is operable by a translational motion signal from said CPU.

7. The system of claim 1, additionally comprising:

(c) an imaging module, said imaging module capable of providing an image signal to said CPU, said CPU capable of translating said image signal to an image of a portion of the body of the subject.

8. The system of claim 1, further comprising a display device.

9. The system of claim 7, further comprising a display device.

10. The system of claim 9, wherein said display device is capable of displaying said image of said portion of the body of the subject with a determined position of the medical device superimposed on said image of said portion of the body of the subject.

11. The system of claim 1, wherein said CPU receives at least two of said output signals and computes a position of said radiation source based on said output signals,

12. The system of claim 1, wherein said CPU receives at least three of said output signals and computes a position of said radiation source based on said at least three output signals.

13. The system of claim 12, wherein said CPU computes said position repeatedly at intervals so that a position of said radiation source as a function of time may be plotted.

14. The system of claim 1, wherein said radiation source employs an isotope with a half life in the range of 6 to 18 months.

15. The system of claim 1, additionally comprising said radiation source capable of providing said radiation.

16. The system of claim 1, wherein said directional information is produced when the source has an activity in the range of 0.01mCi to 0.5mCi.

17. A sensor for directionally locating an ionizing radiation source, the sensor comprising:

(a) at least one functional component; and

(b) a displacement mechanism which imparts angular sensitivity to the sensor by moving said at least one functional component.

18. A sensor according to claim 17, wherein said at least one functional component comprising at least one radiation detector, said at least one radiation detector capable of receiving radiation from the radiation source and producing an output signal;

wherein said displacement mechanism is capable of rotating said at least one radiation detector through a rotation angle so that said output signal varies with said rotation angle.

19. The sensor of claim 18, wherein said at least one radiation detector comprises at least one first radiation detector and at least one second radiation detector and said output signal comprises at least one first output signal from said at least one first radiation detector and at least one second output signal from said at least one second radiation detector.

20. The sensor of claim 19, additionally comprising at least one radiation shield installed at a fixed angle with respect to said at least one first radiation detector and said at least one second radiation detector so that a magnitude of said first output signal from said at least one first radiation detector and a magnitude of said second output signal from said second radiation detector vary with said rotation angle.

21. A sensor according to claim 17, comprising:

(a) at least one first radiation detector and at least one second radiation detector, each of said at least one first radiation detector and at least one second radiation detector capable of receiving radiation from the radiation source and producing at least one first output signal from said at least one first radiation detector and at least one second output signal from said at least one second radiation detector; and

(b) at least one radiation shield, said radiation shield rotatable about an axis of shield rotation through an angle of shield rotation, so that a magnitude of said first output signal from said at least one first radiation detector and a magnitude of said second output signal from said second radiation detector each vary with said angle of shield rotation.

22. A sensor according to claim 20, wherein said at least one radiation shield comprises:

(i) a primary radiation shield located between said at least one first radiation detector and said at least one second radiation detector;

(ii) at least one first additional radiation shield deployed to interfere with incident radiation directed towards said at least one first radiation detector; and

(iii) at least one second additional radiation shield deployed to interfere with incident radiation directed towards said at least one second radiation detector.

23. The sensor according to claim 22, wherein said at least one first additional radiation shield and said at least one second additional radiation shield are each inclined towards said primary radiation shield.

24. A sensor according to claim 22, wherein said at least one first radiation detector and said at least one second radiation detector are organized in pairs, each pair having a first member and a second member and each radiation shield of said primary and additional radiation shields is located between one of said first member and one of said second member of one of said pairs so that said output signal varies with said rotation angle.

25. The sensor of claim 17, additionally capable of revolving said at least a functional component about an axis of revolution through an angle of revolution.

26. A method of determining a location of a device, the method comprising:

(a) providing a device having a radiation source associated therewith;

(b) determining a direction towards said radiation source;

(c) further determining at least a second direction towards said radiation source;

(d) locate said device by calculating an intersection of said first direction and said at least a second direction.

27. The method of claim 26, wherein said further determining at least a second direction towards said radiation source includes determining at least a third direction towards said radiation source and additionally comprising:

(e) calculating a point of intersection of said first direction, said second direction and said at least a third direction.

28. A method of manufacturing a trackable medical device, the method comprising incorporating into or fixedly attaching a detectable amount of a radioactive isotope to the medical device.

29. The method of claim 28, wherein said detectable amount is in the range of 0.01mCi to 0.5mCi.

30. The method of claim 28, wherein said detectable amount is 0.1 mCi or less.

31. The method of claim 28, wherein said detectable amount is 0.05 mCi or less.

32. The method of claim 28, wherein said isotope is Iridium-192.

33. Use of an ionizing radiation source with an activity of 0.1 mCi or less as a target for non imaging localization or tracking.